

Appln No. 10/726,177
Amdt date July 9, 2007
Reply to Office action of March 8, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) An implant comprising:
 - a rod;
 - a shaft;
 - a holding element connected with the shaft, wherein the holding element comprises a recess with a U-shaped cross section for receiving the rod, the recess forming two free legs having at one end thereof an inner thread;
 - a closure element for fixation of the rod inserted into the U-shaped recess, the closure element having an outer thread cooperating with the inner thread of the legs and having a lower side which contacts the rod; and
 - an abutment ~~directly contacting the closure element~~ to limit a tilting of the closure element about the rod at the time of final tightening of the closure element in the holding element;

wherein the closure element is movable from a first position spaced from the abutment wherein a lower side of the closure element contacts the rod to a second position wherein the lower side of the closure element directly contacts both the abutment and the rod.
2. (Previously Presented) The implant according to claim 1, wherein the abutment is a support surface for a section of the lower side of the closure element.
3. (Previously Presented) The implant according to claim 2, wherein the U-shaped recess has a bottom and the rod has a diameter, a distance from the bottom of the U-shaped recess to the support surface being smaller than the diameter of the rod.

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4. (Previously Presented) The implant according to claim 3, wherein the distance is smaller than the diameter by an amount from about 1% to about 7.5% of the diameter.

5. (Original) The implant according to claim 1, wherein the abutment is an inward projecting surface on the inside of the free legs of the holding element.

6. (Original) The implant according to claim 1, wherein the shaft and the holding element are connected monoaxially.

7. (Original) The implant according to claim 6, wherein the shaft and the holding element are formed in one piece.

8. (Original) The implant according to claim 1, wherein the shaft has a head at one end that is polyaxially connected to the holding element,

wherein the implant further comprises a pressure element having an end facing the closure element for acting upon the head to fix an angular position of the shaft relative to the holding element, and

wherein the abutment is provided at the end of the pressure element.

9. (Currently Amended) The implant according to claim 8, wherein the pressure element comprises a ~~second~~ U-shaped recess with a ~~second~~ bottom corresponding to the U-shaped recess of the holding element, the ~~second~~ U-shaped recess of the pressure element forming ~~third and fourth~~ two free legs having a free end in a plane and wherein the abutment is formed by the free end.

10. (Currently Amended) The implant according to claim 9, wherein the rod has a diameter and wherein a distance from the ~~second~~ bottom of the U-shaped recess of the pressure element to the free end of the pressure element is smaller than the diameter of the rod.

11. (Original) The implant according to claim 1, wherein the inner thread of the legs and the outer thread of the closure element are formed as a thread selected from the group

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consisting of a metric thread, a saw tooth thread, a thread having a load flank having a negative angle, and a flat thread.

12. (Original) The implant according to claim 1, wherein the shaft comprises a bone thread or a bone hook.

13. (Currently Amended) A method of fixing a rod relative to a bone, the method comprising:

providing an implant comprising:

a rod;

a shaft;

a holding element connected with the shaft, wherein the holding element comprises a recess with a U-shaped cross section for receiving the rod, the recess forming two free legs having at one end thereof an inner thread;

a closure element for fixation of the rod inserted into the U-shaped recess, the closure element having an outer thread cooperating with the inner thread of the legs and having a lower side which contacts the rod; and

an abutment directly contacting the closure element to limit a tilting of the closure element about the rod at the time of final tightening of the closure element in the holding element;

connecting the implant to the bone;

positioning the rod in the implant; and

fixing the rod in the implant, wherein the fixing step includes tightening of the closure element by applying strong forces to tilt the closure element about the rod until stopped against further forward movement by the abutment.

14. (Original) The method according to claim 13, wherein the implant is a polyaxial screw and the method further comprises adjusting the angular position of the polyaxial screw element relative to the holding element and adjustment of the rod.

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15. (Previously Presented) The method according to claim 13, wherein the implant is a polyaxial screw comprising a head with a recess in the head and the method further comprises:

assembling the polyaxial screw and holding member of the implant;
inserting a pressure member into the holding member;
screwing the polyaxial screw into the bone using a driving tool that drives the screw by means of the recess in the head; and
after positioning the rod, fixing the rod by tightening the closure element in the holding element.

16. (Cancelled)

17. (Cancelled)

18. (Previously Presented) The implant according to claim 8, wherein the shaft comprises a screw element having a bone thread and a head and the pressure element is shaped such as to at least partly encompass the head of the screw element.

19. (Previously Presented) The implant according to claim 8, wherein the shaft comprises a screw element having a bone thread and a head and the pressure element includes a coaxial bore for inserting a screw-in tool to cooperate with the head of the screw element.

20. (Previously Presented) The implant according to claim 10, wherein the distance is smaller than the diameter by an amount from about 1% to about 7.5% of the diameter.

21. (Previously Presented) The implant according to claim 1, wherein the lower side of the closure element contacts the abutment at the time of final tightening of the closure element in the holding element.

22. (Previously Presented) The implant according to claim 1, wherein the abutment is a surface of the free legs of the holding element projecting inwardly into the recess.

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23. (Previously Presented) The implant according to claim 6, wherein the shaft and the holding element are a single continuous one piece part.

24. (Previously Presented) The implant according to claim 1, wherein the shaft has a head at one end that is polyaxially connected to the holding element,

wherein the implant further comprises a pressure element having an end facing the closure element for acting upon the head to fix an angular position of the shaft relative to the holding element, and

wherein the abutment is provided at the end of the pressure element and the lower side of the closure element contacts the end of the pressure element at the time of final tightening of the closure element in the holding element.

25. (Previously Presented) The method of claim 13, further comprising moving the closure element into contact with the rod and into contact with the abutment.

26. (New) An implant comprising:

a rod;

a shaft having a head at one end that is polyaxially connected to a holding element, the holding element comprising a recess with a U-shaped cross section for receiving the rod, the recess forming two free legs having at one end thereof an inner thread;

a closure element for fixation of the rod inserted into the U-shaped recess, the closure element having an outer thread cooperating with the inner thread of the legs and having a lower side which contacts the rod;

a pressure element having an end facing the closure element for acting upon the head to fix an angular position of the shaft relative to the holding element; and

an abutment on the pressure element to limit a tilting of the closure element about the rod at the time of final tightening of the closure element in the holding element;

wherein the closure element is movable from a first position spaced from the abutment wherein a lower side of the closure element contacts the rod to a second position wherein the lower side of the closure element directly contacts both the abutment and the rod.

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Amendments to the Drawings:

The attached sheet of drawings includes changes to 7. This sheet, which includes Fig. 7, replaces the original sheet including Fig. 7.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes